

PROPOSED DRAFT

MAINE POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT  
AND  
MAINE WASTE DISCHARGE LICENSE

FACT SHEET

Date: December 9, 2002

Permit Number: MEG130000

GENERAL PERMIT FOR FINFISH AQUACULTURE

AREA OF COVERAGE:

Marine waters of the State located East of Naskeag Point in Brooklin, except those North or a line from Schoodic Point in Winter Harbor to Baker Island in Cranberry Isles to Naskeag Point in Brooklin.

RECEIVING WATER CLASSIFICATIONS: Class SB or SC

1. APPLICATION SUMMARY

The Maine Department of Environmental Protection proposes to issue a new General Permit authorizing discharges from and incidental to the operation of marine finfish aquaculture operations located in certain waters of the State. Once issued, each individual operation (or "facility") wishing to obtain coverage under and discharge pollutants pursuant to the Permit would file a separate Notice of Intent ("NOI"). Coverage is dependent upon the ability of each facility to meet the eligibility, operational and monitoring requirements of the Permit. Continuing coverage is contingent on compliance with the terms and conditions of the Permit, and coverage for an individual facility may be terminated in the event of non-compliance. Facilities that are not able to obtain coverage under the Permit may apply for an individual Maine Pollutant Discharge Elimination System ("MEPDES") permit.

2. BACKGROUND

A permit for the operation of a finfish aquaculture facility is required pursuant to Maine Law, 38 MRSA section 413(10) and the Department's rules, Chapter 521(7). General permits may be issued authorizing the discharge of certain pollutants pursuant to the Department's rules, Chapter 529. The Department may issue a general permit to a category of point sources located within the same geographic area whose discharges warrant similar pollution control measures. The similarity of discharges from finfish aquaculture facilities has prompted the Department to propose this Permit for those waters where the assimilative capacity for the pollutants involved is relatively large in comparison to the anticipated discharge quantities. Violation of a condition of a general permit constitutes a violation of the States water quality laws

and the Clean Water Act, and subjects the discharger to penalties under 38 M.R.S.A. § 349 and the Clean Water Act, § 309.

Pursuant to 12 MRSA, subchapter II and 13-188 CMR, chapters 2 and 24, the Maine Department of Marine Resources (“DMR”) has regulatory authority over these facilities. The DMR may issue leaseholds for the location and operation of aquaculture operations after considering, among other things, the effects on navigation, fishing, rights of riparian owners, natural resources and public uses. The DMR further regulates the transfer of fish into marine aquaculture operations and has responsibility for fish health issues. Finally, the DMR conducts monitoring in and around aquaculture location through its Finfish Aquaculture Monitoring Program or “FAMP”.

The US Army Corp of Engineers, acting pursuant to Section 10 of the Rivers and Harbors Act of 1899, permits the installation of net pen containment systems in which finfish aquaculture activities are conducted.

### 3. DESCRIPTION OF PERMITTED ACTIVITIES

Finfish aquaculture activities are conducted by placing fish in a system of one or more free-floating net pens moored in the open ocean. Most fish are introduced as juveniles and raised to adult size for harvest as a commercial food source. Some fish may be maintained as brood stock. The fish are grown or maintained by adding fish food and, as necessary, medications to the water. Currently, Atlantic salmon (*Salmo salar*) is the predominate species reared, although the Permit would also allow culture of rainbow trout (*Oncorhynchus mykiss*), Atlantic halibut (*Hippoglossus hippoglossus*), haddock (*Melanogrammus aeglefinus*), Atlantic cod (*Gadus morhua*), or other salmonid species indigenous to Maine waters. Fish are maintained on a year-round basis; the typical rearing period for Atlantic salmon is 18 to 20 months, during which they reach a size of 8 to 12 kg.

The majority of discharges from a facility is expected to come from fish excrement and unconsumed feed. The discharges increase significantly during the months of August, September and October when the fish are growing more rapidly in response to increased feeding and optimum growing conditions. Medications may be used to prevent or combat infectious disease or parasites. The US Food and Drug Administration grants approval for specific uses of medications, although a veterinarian may prescribe an approved drug for a use or rate not described on its approved label. Additionally, FDA may authorize the use of Investigational New Animal Drugs (“INAD”) and aquaculture facilities may wish to use such medications as part of studies of their effectiveness. Other discharges incidental to the operation of an aquaculture facility include fish scales, disinfectants used to prevent the spread of disease, marine growth removed from nets and anti-fouling agents used to treat nets.

There are approximately 44 current finfish aquaculture leases issued by the DMR. Of these, some 33 are presently or have recently been in active use. The statewide total leased acreage is approximately 7450 acres. The individual leases range in size from less than 2 acres to 45 acres. In most instances, however, only a small portion (about 10%) of the leased area is actually used for placement of net pens themselves. In terms of net pens, the active facilities have from 6 to 54 individual pens and these cover 0.2 to 4 acres. The maximum number of fish contained per facility runs from 61,000 to over 1,000,000 fish.

The location of finfish aquaculture facilities is important to both their success in rearing fish and minimizing environmental impacts. Typically, the facility owners seek locations having adequate tidal flushing, appropriate water depths, temperatures and dissolved oxygen concentrations to optimize fish growth. Facilities must also be placed to avoid conflicts with other marine uses such as public access, fishing and navigation. Further, facility operators are concerned with not placing net pens in areas that have very low wintertime water temperatures, damaging ice floes or are subject to high wind or seas.

#### 4. HISTORY

Historically, EPA did not issue National Pollutant Discharge Elimination System (“NPDES”) permits for finfish aquaculture facilities in Maine.

Enacted in 1987, 38 MRSA section 413 (2-F) exempted aquaculture facilities from the need for a State Waste Discharge License. The law did require that the Department certify to the DMR that a proposed aquaculture facility would not have a significant adverse effect on water quality before a lease could be issued.

In July 2000, citizens groups filed suit under Federal law against three large Maine finfish aquaculture operators for violation of the Clean Water Act by discharging without a NPDES permit.

In 1998, a new subsection 10 was added to 38 MRSA, section 413 requiring discharge licenses for aquaculture activities after the State received authorization from EPA to administer the NPDES program.

In November 1999, the State applied to EPA for authorization to administer the NPDES program in Maine. Included in the application was a Memorandum of Agreement between the Department and EPA, Region I (subsequently revised in April 2000). Section III (10) of the MOA specifically addresses the permitting of aquaculture facilities and recognizes the Department’s need to take appropriate action in MEPDES permits to protect the Atlantic salmon as an endangered species under Federal law.

On November 19, 1999, a Gulf of Maine distinct population of Atlantic salmon was listed as an endangered species. 64 Federal Register 62627.

On January 12, 2001, the EPA grant authorized the Department to administer the NPDES program in most areas of the State, including all those relevant to this Permit.

On February 2, 2002, EPA issued a NPDES permit for Acadia Aquaculture, a proposed new finfish aquaculture facility in Blue Hill Bay.

On July 2002, a proposed consent decree in settlement of the citizen lawsuit with one of the three companies was accepted by the Federal District Court.

## 5. AREA OF COVERAGE

This Permit covers marine waters of the State located East of Naskeag Point in Brooklin, except those North or a line from Schoodic Point in Winter Harbor to Baker Island in Cranberry Isles to Naskeag Point in Brooklin. This area of coverage has been selected because any potential adverse impact on ambient water quality from finfish aquaculture facilities operated as permitted would be minimal. The tidal flushing and volume of water exchange is great and the natural input of nutrients from the Gulf of Maine is large in comparison to the loading from a properly operated facility. Many of the existing facilities are located in this area. The Department has chosen to exclude from the area of coverage Blue Hill Bay and Frenchman's Bay regions, since these areas have less tidal flushing and nutrient loadings are a relatively greater concern. However, exclusion from general permit coverage does not categorically make these areas unsuitable for finfish aquaculture, and individual permits may still be issued. Similarly, facilities locating in the waters of the State West of the coverage area may be permitted with individual permits.

The direct discharge of pollutants to Class SA waters is prohibited by 38 MRSA section 465-B (1)(c) and SA waters within the general area of coverage are excluded.

The Permit specifies an average current velocity below net pens of 5 cm per second, except near the times of slack tide. This is to ensure that a sufficient current is available to provide adequate mixing of pollutants leaving the net pens. The current speed reflects a best professional judgement and is in consideration of related siting criteria in Scotland and British Columbia. The Department recognizes that this value is only a moderate current velocity. However, information available for existing operations in Maine does not indicate that current velocity alone is a determining factor for assuring an acceptable level of impact from aquaculture facilities. Rather, it is one consideration for assuring a successful operation. Current has the effect of dispersing pollutants as they are lost from net pens. A higher velocity will cause the same amount of material to be spread over a larger area. Conversely, at a lower velocity pollutants may be more likely to concentrate in the area directly or immediately adjacent to the net pens. Those facilities choosing to locate in areas with lower current velocities will need to maintain an especially high level of attention to operational and husbandry practices to minimize the loss of pollutants in order to remain in compliance with the conditions of the Permit.

Requirements of the DMR and US Army Corps of Engineers also affect the location and operation of aquaculture facilities. The Permit requires that facilities demonstrate they have obtained or will obtain these permits in order to assure facilities will not impair narrative water quality criteria such as fishing, navigation and public uses of adjoining waters. Under Maine law, 12 MRSA, section 6072 (7-A), the DMR is required to make the following findings prior to granting a lease for an aquaculture facility:

- A. "Will not unreasonably interfere with the ingress and egress of riparian owners;
- B. Will not unreasonably interfere with navigation;
- C. Will not unreasonably interfere with fishing or other uses of the area taking into consideration the number and density of aquaculture leases in an area. For the purposes of this paragraph, "fishing" includes public access to a redeemable shellfish resource, as defined by the department, for the purpose of harvesting, provided that the resource is commercially significant and subject to a pollution abatement plan that predates the lease application, that includes verifiable activities in the process of implementation and that is reasonably expected to result in the opening of the area to the taking of shellfish within 3 years;
- D. Will not unreasonably interfere with the ability of the lease site and surrounding areas to support existing ecologically significant flora and fauna;
- E. The applicant has demonstrated that there is an available source of organisms to be cultured for the lease site; and
- F. The lease does not unreasonably interfere with public use or enjoyment within 1,000 feet of municipally owned, state owned or federally owned beaches and parks or municipally owned, state owned or federally owned docking facilities."

These considerations are similar to, or more stringent than, those necessary to determine if the narrative water quality are met, and represent the findings of another State agency having expertise in these matters. In the absence of other information, the Department would normally place significant weight on the DMR's findings. Similarly, the US Corps of Engineers is considered to be experts on issues of navigation.

## 6. ADMINISTRATIVE REQUIREMENTS

Many of the Permit's administrative procedures and requirements are drawn from the Department's rules, Chapter 529, *General Permits for Certain Wastewater Discharges* and Maine law. Once the Permit is issued, individual facilities wishing to obtain coverage under it must file a Notice of Intent ("NOI") containing sufficient information to describe the facility and allow the Department to determine if it will be able to comply with the Permit. Evidence of the ability to obtain other permits is also required. Once a complete NOI is received, the Department has 14 days in which to act on it; if no other action is taken, the NOI is deemed to be approved at the end of

14 days. Since most facilities that will be covered by the Permit will be existing facilities for which monitoring and operational information is available (often through the DMR), the 14-day turn-around time is not anticipated to be a major problem in evaluating an NOI. However, new facilities will lack such information. In order to provide for the additional review time and detail need in such cases, the Permit requires that certain information be submitted in advance of a complete NOI. These submittals will, to the extent possible, be coordinated with the filing of a leasehold application to the DMR. For new applications, the Department must also fulfill the requirements of the State's anti-degradation policy found at 38 MRSA, §464(4)(F).

In the event that a facility covered by the Permit is sold, a new owner must apply to the Department for transfer of the NOI. Chapter 2 of the Department's rule and 38 MRSA, section 413 (3) govern the transfer of permits.

Typically, a facility may continue its coverage under the Permit from one year to the next providing that no significant changes occur in the facility's operation and upon payment of an annual fee (currently up to \$100) pursuant to 38 MRSA, section 353-B. In the event changes do occur or if a facility is not in compliance with the Permit, the Department may require that the facility apply for an individual permit. A relevant change in DMR lease conditions or the conditions of a US Army Corps of Engineers permit would be considered to be a significant change.

## 7. CONDITIONS OF PERMITS

Maine law, 38 M.R.S.A. Section 414-A, requires that the effluent limitations prescribed for discharges require application of best practicable treatment, be consistent with the U.S. Clean Water Act, and ensure that the receiving waters attain the State water quality standards as described in Maine's Surface Water Classification System. In addition, 38 M.R.S.A., Section 420 and Department Regulation Chapter 530.5, *Surface Water Toxics Control Program*, requires the regulation of toxic substances at the levels set forth for Federal Water Quality Criteria as published by the U.S. Environmental Protection Agency pursuant to the Clean Water Act.

## 8. RECEIVING WATER STANDARDS

This Permit authorizes discharges to Class SB and Class SC waters; the classification standards are found at 38 MRSA, sections 465-B (2) and (3), respectively.

## 9. RECEIVING WATER CONDITIONS

This Permit allows discharges only in locations where they will not cause violation of receiving water classification standards. There are only limited general monitoring data for marine waters in the area of coverage. In general, the Department has not identified any significant areas of concern that would indicate non-attainment of classification standards. Dissolved oxygen saturation has been observed to fall below minimum standards in limited areas and times in the summer. These conditions are

often attributable to natural conditions such as thermal stratification. While several areas are closed to shellfishing due to bacterial contamination, this does not bear on finfish aquaculture operations since they are not a source of bacteria of human origin. Limited information regarding the presence of toxic substances (e.g. PCB's, PAH's, metals, etc.) are most likely to occur in locations in proximity to higher population densities or industrial uses such as marinas or petroleum terminals. Such activities are less prevalent in those regions of the State covered by this Permit. As part of the DMR's FAMP, water quality measurements are conducted in the area of existing aquaculture facilities. Outside of the area that would be covered by proposed mixing zones (see section 11) dissolved oxygen levels have typically met classification standards. Adverse benthic impacts do occur on the sea floor beneath some facilities; these are most often due to accumulations of excess feed and/or fecal matter.

#### 10. ANTI-DEGRADITION

See 38 MRSA, section 464 (4)(F). Existing discharges must, among other things, not cause existing uses or cause the classification standards to be violated. In addition, waters of higher quality must be maintained at that level. The Permit prohibits coverage for facilities located in water not meeting their classification standards, and provides that covered discharges not cause significant lowering of water quality. Water quality monitoring information from the FAMP will be used to assist the Department in evaluating NOIs from existing facilities. The State's anti-degradation policy also calls for additional considerations when new discharges are proposed. In these cases, the Permit requires that information be submitted prior to the filing of a NOI, usually concurrently with the facility applying for a lease from the DMR. This will allow additional time for evaluation of potential water impact from the proposed discharge. As with other discharges to marine waters, new aquaculture facilities will be reviewed individually and incremental increases in pollutant loads will be evaluated in combination with existing point and non-point discharges. Where a significant lowering of water quality may occur, the Department will require that additional information necessary to complete anti-degradation findings be submitted. The Permit defines a new facility as one commencing operation on a site not used for finfish aquaculture within the previous five years.

#### 11. MIXING ZONES

Pursuant to 38 MRSA, section 451, the Department may establish mixing zones as part of a licensing action. The law states, in part, "[t]he purpose of a mixing zone is to allow a reasonable opportunity for dilution, diffusion or mixture of pollutants with the receiving waters before the receiving waters below or surrounding a discharge will be tested for classification violations. In determining the extent of any mixing zone to be established under this section, the department may require from the applicant testimony concerning the nature and rate of the discharge; the nature and rate of existing discharges to the waterway; the size of the waterway and the rate of flow therein; any relevant seasonal, climatic, tidal and natural variations in such size, flow, nature and rate; the uses of the waterways in the vicinity of the discharge, and

such other and further evidence as in the department's judgment will enable it to establish a reasonable mixing zone for such discharge. An order establishing a mixing zone may provide that the extent thereof varies in order to take into account seasonal, climatic, tidal and natural variations in the size and flow of, and the nature and rate of, discharges to the waterway.”

This Permit establishes mixing zones for both the water column and sea floor beneath and adjacent to finfish aquaculture facilities. For the water column, the mixing zone includes waters within and extending 30 meters beyond the net pens. In that area, the dissolved oxygen concentration must not fall below 6.0 mg/L and there may not be concentrations of any substance that would be acutely lethal to organisms drifting or swimming through the mixing zone. Acute lethality is generally evaluated on an exposure time of one hour. This combination of oxygen level and no acutely toxic affects will allow use of the waters within the mixing zone as an acceptable habitat for aquatic organisms.

With regard to the sea floor or benthic mixing zone, the Permit establishes a mixing zone beneath and extending out from the net pens a distance of 30 meters. Within that area, two sub-zone or impact areas are defined. The first encompasses the sea floor directly under and within 5 meters of the net pens. The second extends from 5 meters beyond the pens out to 30 meters. Within each area, the Permit allows some changes, in fauna and physical characteristics of the sediment, but does not contemplate unlimited changes or the loss of all types of organisms.

## 12. POTENTIAL WATER QUALITY IMPACTS

Finfish aquaculture facilities can cause changes in the immediate area of the net pens. Some deposition of material, primarily uneaten feed and feces, on the sea floor directly beneath and adjacent to net pens can be expected. The Permit makes provisions for some adverse impacts within the benthic mixing zone, but all classification standards must be maintained outside that area. The deposition of organic materials on the sea floor can, through decomposition, result in depletion of oxygen in the sediments composing the sea floor. This, in turn, can render the area unsuitable for a normal number and diversity of natural organisms. Such conditions, which may occur in varying degrees, may be evidenced by reduced Redox Potential, the formation of gas in the sediment, the predominance of undesirable organisms or the loss of certain species. Since most of the accumulating material is biodegradable through natural processes, the reduction or suspension of aquaculture activities will allow mitigation of benthic impacts without long term impacts.

The large number of fish in the net pens may, within the immediate water column, reduce dissolved oxygen concentrations due to respiration. The result may be saturation standards not being met under all conditions in summer months. However, it should be noted that minimum dissolved oxygen concentrations measured by DMR's FAMP program have been more than adequate to sustain all marine life. The Permit establishes a minimum dissolved oxygen concentration of 6.0 mg/L within the



water column mixing zone and the saturation levels prescribed by the respective classification standards must be maintained outside the mixing zone at all times.

There are concerns that an aquaculture facility may harbor diseases or parasites that could spread to wild or other aquaculture facility. The use of disinfectants is a necessary part of preventative practices, and the Department supports their use consistent with recommendations of fish health authorities. However, the use of medications and disinfectants pose potential concerns for toxicity if discharged in excessive amounts. These effects include acute toxicity to non-target aquatic organisms in the immediate area of the use, chronic effects on benthic organisms and bioaccumulation in the food chain.

The placement of net pens in the water does limit certain narrative uses of the water body. These concerns include fishing and navigation. Aesthetic concerns including visual impacts, noises from the operation of equipment and boat traffic, have also been raised. These arise from the physical placement of the pens, not discharge activities, and are therefore are not subject to regulation as pollutant discharges under this Permit. However, the DMR lease approval process and the US Army Corps of Engineers permits for finfish aquaculture operations both consider these topics. By requiring evidence of other permits, the Permit does assure that the public concerns and interests are protected.

In November, 2000, the National Marine Fisheries Service and the United States Fish & Wildlife Service (collectively, the “Services”) issued a final rule listing Atlantic salmon populations in certain Maine rivers and streams as “endangered” under the federal Endangered Species Act. The listing identified several risks to Atlantic salmon posed by finfish aquaculture, including potential spread of diseases, and the potential that escaped cultured fish could disrupt reproduction of river populations of Atlantic salmon. The State of Maine has appealed the ESA listing.

The Permit contains conditions for finfish aquaculture operations in three primary areas: loss prevention through audited containment practices, marking of fish to identify the origin of any fish that may escape, and use of only North American strains of Atlantic salmon. These, as well as other related conditions are proposed to be consistent with the minimum requirements of the Services and have been included in the proposed Permit to satisfy requirements in Maine’s NPDES authorization with full reservation of all rights of the State of Maine in its listing challenge. As to findings of compliance with the condition regarding the use of North American strains, the Department intends to consult further with the Services and other affected parties to make these determinations.

The Department has considered each of these potential impacts and developed permit limits to address or control each. As permitted, finfish aquaculture facilities will not cause unreasonable degradation of marine waters and will be in compliance with 38 MRSA, section 464 (4)(A)(11).

### 13. DISCHARGE LIMITATIONS AND CONTROLS

Technology-based requirements represent the minimum level of control that must be imposed under 38 MRSA, section 414-A (1)(D) and Chapter 524, section 2. Technology-based requirements are applied through best conventional control technology (BCT) for conventional pollutants; and best available technology economically achievable (BAT) for toxic and non-conventional pollutants. The factors to be considered in developing technology-based limits include, among other things, the age of existing facilities, engineering issues, process changes, non-water quality-related environmental impacts, and the costs of achieving required effluent pollutant reductions. Federal Effluent Guidelines (minimum treatment technology standards) for concentrated finfish aquaculture facilities have not yet been promulgated, however, EPA has begun a lengthy process which should result in guidelines being developed by 2004. In the absence of such guidelines, the Department has used Best Professional Judgement (“BPJ”) to establish certain effluent limitations and other conditions in the form of Best Management Practices (BMPs) for the culture of finfish in open water net-pens at marine sites. Under Chapter 523, section 5, the Department is authorized to set BMPs as conditions in permits where, among other things, the establishment of numeric limits is infeasible or where such practices are reasonably necessary to achieve effluent limits or carry out the purposes and intent of the Clean Water Act. The Department has reviewed possible technologies currently available for the collection, treatment, and disposal of wastes generated by the net pens, and for minimizing the loss of unconsumed food and food fines. The Department has determined that there are no proven technologies currently available that are feasible for the collection of net pen wastes. Therefore, the Department has used BPJ to establish BMPs designed to minimize the introduction of waste and other pollutants to the waters, including a requirement that the facility operators employ techniques and technologies to minimize the loss of unconsumed food. These BMPs will not only ensure that modern technology is employed to ensure a minimum level of control at the facility, but will also serve the dual function of assuring that water quality standards are met. Ambient monitoring, record keeping and reporting will be used to evaluate the performance of BMPs.

The amount of fish feed introduced into the water is the primary means of pollutant control. Management practices should limit feed used to amounts and times such that fish consume as nearly all of it as possible. Not only does this provide for the least loss of pollutants, it benefits the facility owner since feed is the single largest operational expense. The Permit requires that facilities utilize real-time control methods to monitor the amount of uneaten feed lost from the net pens. The most commonly used method is installation of video cameras in the water to observe feed falling through the water column. The Permit also includes a Feed Conversion Ratio (“FCR”) that represents the total amount of feed used per unit weight of fish in the pen over the total time they are there. This factor provides measure of the efficiency of the feeding operation over the total growing cycle for a year class of fish. The amount of feed used at any given time varies on a number of factors, including fish

size, water temperature and husbandry objectives. The FCR, 1.3 kg/kg of fish harvested, was developed using BPJ in consultation with DMR. Some individual facility owners have reported that in practice their FCRs are lower than this value, with a management goal of 1.1 being cited. However, the Department believes that the higher value of 1.3 is more appropriate to reflect varying conditions that may exist at different facilities, times and growing conditions.

Potential benthic impacts within the mixing zone are being controlled through “warning levels” and “impact levels” for each of the sub-areas. The impact levels represent unacceptable conditions. The warning levels represent conditions of concern that if were to worsen could become violations. For each area and limit, several parameters are to be monitoring and evaluated to determine compliance: Redox potential, the formation of gas in the sediments, the presence of *Beggiatoia* bacteria, the presence of anoxic sediments, too many pollution-tolerant organisms, too few pollution-sensitive organisms, the general reduction of all organisms or the diversity of organisms present. Similarly, the Permit establishes criteria for sediment outside of the mixing zone areas to define what conditions are considered to represent full attainment of narrative criteria for classes a SB and SC waters. The law does not prescribe exact numeric criteria for the criteria in the Permit. The Department has, through BPJ, described conditions and measurements that most marine biologists consider indicative of adverse impact. While any single parameter is an important indication of the health of benthic communities, an impacted area can often exhibit several of the adverse impacts. Further, other measurements and observations may be used to supplement the criteria listed in the Permit to conduct most meaningful professional assessment of a particular site. Where impact limits are exceeded or if warning levels are exceeded by increasing amounts in subsequent monitoring events, the Permit requires that facility owners review operations and make adjustments to correct or avert unacceptable conditions.

Disinfectants may be used to prevent or control diseases. However, these substances are by their nature toxic and the Permit prohibits their discharge except for incidental losses consistent with appropriate use and management practices.

The permit allows the use of medications to prevent or control disease outbreaks, and restricts normal uses to those listed on the label for US Food and Drug Administration (“FDA”) approved drugs. Off-label uses of approved drugs and the use of investigational drugs will require individual review and approval by the Department to assure the specific drug and intended use will not contribute to impairment of water quality criteria. To the extent possible, the Department intends to coordinate studies and evaluations with FDA in order to avoid duplication of effort, and will tailor monitoring requirements to provide information regarding effects on Maine waters and locally important uses. An important means of reducing the risk of disease is through the use of single year classes of fish and fallowing of sites before restocking with a subsequent year class. These practices are managed in Maine by the DMR pursuant to that agency’s rules, Chapter 24. The Permit incorporates single year class husbandry and compliance with that rule. There is also a provision that

dead fish be removed from net pens at least weekly under normal conditions and more frequently as required by the DMR and/or the US Department of Agriculture in order to maintain fish health.

The Permit contains various conditions to prevent unnecessary discharges or impacts if good management practices are not followed. The discharge of blood, viscera, or contaminated transport water is prohibited as these materials can communicate disease and good management practice is to contain them. Similarly, solid wastes and human sanitary wastes are not to be discharged. Where horizontal predator nets are used, a 3-meter separation from the bottom is to be maintained to prevent scouring of the bottom, and to allow for safe access by divers conducting monitoring activities. Vertical predator nets have only minimal bottom contact and do not present as great a risk for scouring.

Net pens accumulate marine growth that periodically must be removed. Chemical agents or mechanical means such as pressure washing are available at sea. Alternately, nets may be taken on-shore for cleaning. When on-shore, nets are typically treated with anti-fouling agents similar to those used on boats; these compounds often contain copper. Because anti-fouling agents will slowly be lost to the waters, the Permit requires periodic monitoring of sediments below the nets pens to determine if copper or zinc pose a risk of building up to levels where toxicity may be a concern. As an alternative to the use of toxic compounds, the Permit allows the use of mechanical means to clean nets at sea, provided that the practice does not cause solids to accumulate on the sea floor such that they would contribute to adverse impacts. There may be instances where fish health authorities may require specific net cleaning procedures necessary to control the spread of diseases, and the Permit would allow those practices under the supervision of appropriate authorities.

The Permit contains a requirement that each facility develop and maintain a spill prevention, containment and countermeasure plan to address potential losses of oil or chemicals from at-sea facilities or equipment used to support net pen operations.

#### 14. MONITORING AND REPORTING

The Permit requires various monitoring, record-keeping and reporting in order to evaluate compliance with the Permit. To the extent possible, the monitoring has been coordinated with the work done under the FAMP. The Department intends to enter into a memorandum of agreement with DMR for the sharing of information and reports, and to establish a single point of contact for facilities covered by the Permit to submit information. In addition to the core monitoring described in the Permit, the Department can require additional monitoring at individual site as needed to determine compliance or confirm that past problems are being satisfactorily corrected.

Monitoring consists of water column analysis for dissolved oxygen, temperature, salinity and water transparency. Monitoring is to be done both within the mixing

zone and at a “far field” location approximately 100 meter down-current from the net pens. There are two levels of monitoring frequency depending on the facility’s location. The waters in the Cobscook Bay area experience extreme tidal flushing and a lower monitoring frequency is adequate for water column parameters. Benthic and video monitoring are used to assess the impacts on the sea floor. The methods and frequencies are consistent with the FAMP, which is currently undergoing a peer review. In the event that review produces changes in the FAMP, the Permit contains a provision to reopen it to make any adjustments that may be appropriate. The use of single year classes of fish on a site will make biannual benthic monitoring more appropriate since larger fish in the second year mean far greater discharge rates and increased relative risks for impact.

The monitoring data, especially the video and benthic information, require comparative analysis with baseline or reference data to fully evaluate changes or impacts seen in the monitoring. The baseline consists of measurement taken at a site prior to the start of finfish aquaculture. Where available, this information can be the most desirable for comparison to subsequent changes that result from discharge activities. The Permit requires that a baseline study be conducted prior to a new facility beginning operation. The DMR requires the same information to apply for a lease. For existing facilities, complete baseline may not exist or changes unrelated to a facility’s operation may make previous baseline information less useful. To address these situations, the Permit also requires that each facility establish a reference site near the net pens but not significantly affected by them. The reference site may be used to replace or supplement the baseline information, and can be collected on a continuing basis if needed to evaluate current compliance where background conditions are changing. The reference site is also necessary to define natural conditions in the water column for oxygen saturation.

The results of monitoring are to be reported to the Department. Water column information is to be submitted by the 15<sup>th</sup> of the following month. The core video and benthic monitoring are conducted by a FAMP contract by the DMR. The time and effort for handling, processing and reporting of the information for multiple sites is considerable. The Permit allows 90 and 270 days for final reports of the video and benthic information, respectively. However, preliminary assessments are often made at the time of sample collection and are communicated to the facility operator, the DMR and the Department on a real-time basis. Where this preliminary information or past reports for a facility indicate potential problems the Permit allows the Department to request more prompt final monitoring reports.

The Permit also requires facilities to maintain information to document discharge and monitoring activities. These include the number of fish and size of fish, feeding rates, medications used, etc. The location, conditions, time, etc. must be recorded for monitoring events. Reports must also be made to the Department if and when certain events take place. These include a transfer of ownership, changed operating conditions, known or suspected incidents of non-compliance, damage to equipment, escapes of fish, or unpermitted discharges.

## 15. PUBLIC COMMENTS

Public notice of this draft Permit was made in the \_\_\_\_\_ on or about \_\_\_\_\_, and copies have been sent to interested parties of record. The Department receives comments on the Permit until the date a final agency action is taken. Those persons receiving copies of permits shall have at least 30 days in which to submit comments on the draft.

## 16. DEPARTMENT CONTACTS

Additional information concerning this Permit may be obtained from and written comments should be sent to:

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